

Index of Grocery Chain Store Sales

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THE index presented herewith is the most recent of the series of retail sales indexes constructed by the Bureau of Foreign and Domestic Commerce to provide more adequate current data on the movement of retail trade. For some time the Bureau has been publishing monthly statements of percentage changes in chain grocery sales based on a sample which represented sales of an identical group of retail units each month. A homogeneous sample for all firms for a period of years was not readily available for use in constructing the index of sales. This index, therefore, has been constructed from total dollar sales of the contributing firms without consideration of the change in the number of store units and reflects the growth or decrease in grocery chain-store business, rather than variations in sales of an identical group of chain units.

The dollar sales figures from which the index was constructed have been furnished by a group of chain organizations doing about 75 percent of the total grocery chain-store business. Although the index is representative of grocery chain-store sales, it is not designed to measure the sales of all grocery stores, since the trend of sales by independent grocers varies somewhat from that of chain organizations. (See table 1.) The 1935 Census of Business reveals a higher rate of increase from 1933 to 1935 in sales by independent grocers than that by grocery-store chains. From 1929 to 1933 the relative decline of the independents was greater than that of the chains.

Table 1.—Grocery Store Sales by Types of Operation

Item	1929		1933		1935	
	Million dollars	Percent of 1929 total	Million dollars	Percent of 1929 total	Million dollars	Percent of 1929 total
Total sales	7,343	100.0	5,004	68.0	5,352	72.9
Percent of total	100.0		100.0		100.0	
Independent stores	4,489	61.1	2,775	55.5	3,849	71.9
Percent of total	61.1		55.5		71.9	
Chain stores	2,853	38.9	2,229	44.5	1,503	28.1
Percent of total	38.9		44.5		28.1	
Other outlets	32	0.4	19	0.3	30	0.5
Percent of total	0.4		0.3		0.5	

Source: Census of Business, 1935.

Character of the sample.

The chain organizations which have supplied material for the sample on which the index is based sell both groceries and meats. They operated more than 30,500 stores in 1935. The number of units operated was about 65 percent of the chain grocery stores reported by the census for that year and gives representation to all regions of the country in remarkably similar proportion to the census distribution (table 2). The firms cooperating in supplying monthly sales figures are as follows: American Stores Co.; Daniel Reeves, Inc.; First National Stores, Inc.; Great Atlantic & Pacific Tea Co.; H. G. Hill Co.; Kroger Grocery and Baking Co.; National Tea Co.; Red Owl Stores, Inc.; Safeway Stores, Inc., and Southern Grocery Stores, Inc.

Sales of these 10 firms amounted to \$1,641,000,000 in 1935, as compared with \$2,209,000,000 for all grocery

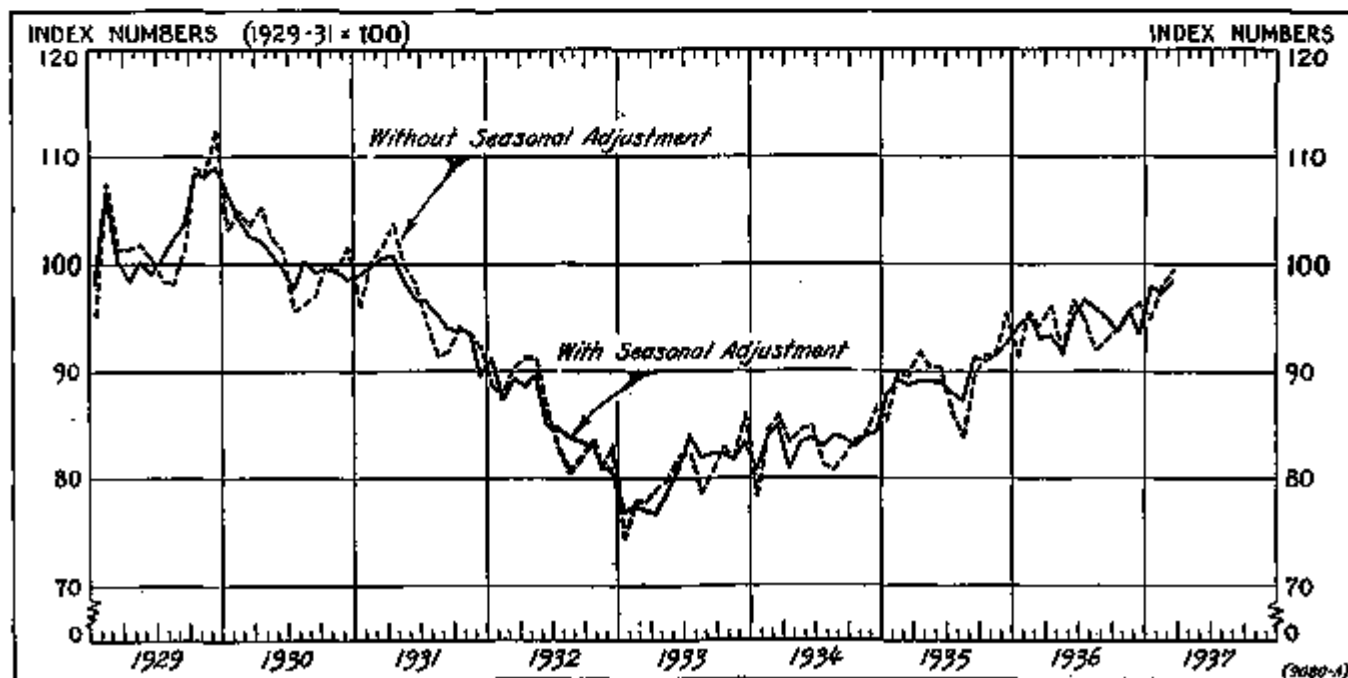


Figure 1.—Index of Dollar Sales of Grocery Chain Stores

chain stores and with \$6,352,000,000 for all grocery store sales, both the latter figures being from the Census of Business for that year.

Table 7.—Grocery Chain-Store Distribution by Geographic Divisions, 1935

Geographic division	Store units in sample	All grocery chain-store units ¹	All grocery chain-store dollar sales ¹
Total United States.....	100.0	100.0	100.0
New England.....	15.8	13.2	12.4
Middle Atlantic.....	30.5	32.9	20.9
East North Central.....	26.8	22.1	22.7
West North Central.....	5.1	6.8	0.2
South Atlantic.....	9.7	8.8	9.8
East South Central.....	3.1	3.0	2.6
West South Central.....	2.5	3.4	4.1
Mountain.....	1.6	1.4	2.4
Pacific.....	5.9	5.0	5.0

¹ Computed from Census of Business, 1935.

Method of Computing the Index.

The monthly index numbers are based on average daily sales. After converting the sales figures of each firm to a basis of average daily sales per calendar month, the figures of the 10 firms were combined for the respective months of the year and the index numbers computed, using the monthly average for the years 1929-31 as 100.

This conversion of the sales of each company to a daily-average basis was necessary, as the sales figures are not reported on a uniform basis because of the difference in accounting periods employed by the several companies. Some organizations record their sales by straight calendar months, others by periods of 4 or 5 weeks, while still others employ a 4-week accounting period, fitting into the 13-month year. Sales reported on an alternating 4- or 5-week basis usually conformed closely enough to the calendar month, but those reported on the 13-month-year basis required an adjustment by prorating the sales figures to the calendar months in which the different periods fell.¹

A comparison of these figures with those of all grocery chain-store sales reported by the Census of Business revealed that the trend of sales as represented by the index followed closely that of the country's total grocery chain-store sales. The decline in sales from 1929 to 1933, as measured by the index, was 22.6 percent, or only slightly more than the decrease of 22 percent reported by the census. From 1933 to 1935 the index showed an increase of 9.3 percent, compared with a gain of 11.7 percent reported in the census. The index here presented has been corrected for this bias by adjusting to the census trend. To accomplish this, the monthly figures, beginning with January 1930, were adjusted by means of arithmetic interpolation. The process involved the application of a cumulative unit, which, when applied over the months of the intervening periods, resulted in bringing the averages for those years

¹ Sales for the 4 weeks were converted to average daily sales by dividing by 28. If 18 workdays of May fell in the fifth reporting period and 8 days fell in the sixth reporting period, the total sales for May were calculated by adding 18 times average daily sales in the fifth period to 8 times average daily sales in the sixth period.

corresponding with census years into adjustment with the census figures.²

Reduction to Average Daily Sales.

Not all months have an equal number of working days, nor are sales of grocery chains evenly distributed throughout the week. According to information supplied by some of the contributing firms, nearly 40 percent of the weekly business of chain grocery stores is normally done on Saturday. For the purpose of converting the sales figures to an average daily sales basis per calendar month, the number of working days in each month has been calculated for the years 1929 to 1937 inclusive (table 3). The days of the week were evaluated from the sales experience of the firms and the following weights assigned: Monday, 0.6; Tuesday, 0.7; Wednesday, 0.7; Thursday, 0.7; Friday, 1.0;

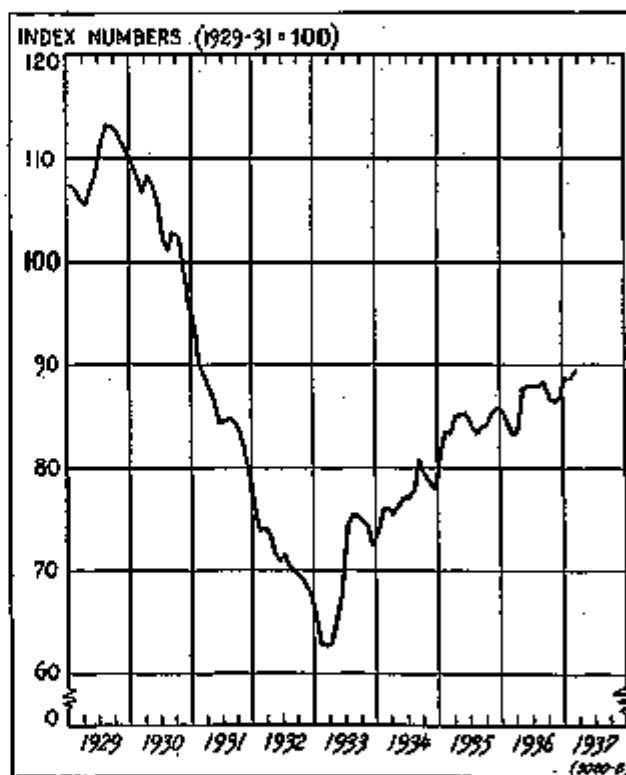


Figure 2.—Retail Prices of Food. (See table 4 for source of data.)

Saturday, 2.3; total, 6.0. The number of working days in any one month was then calculated by adding the weights of all the business days in that month. No allowance was made for holidays, except as noted below, it being assumed that food for consumption on holidays is bought on the preceding day and that the total sales are not affected. However, when a holiday falls on the first working day of a month, six-tenths of a day, the weight of Monday, is subtracted from that month and added to the preceding month. The sales figures on a calendar-month basis were then divided by the calculated number of working days in the

² A detailed description of this method appears in U. S. Bureau of Labor Statistics Bulletin, No. 610, Revised Indexes of Factory Employment and Pay Rolls, 1919 to 1923, p. 14.

respective months to arrive at the average daily sales for the different months.

Table 3.—Number of Working Days in Each Month, 1929 to 1937, for Calculating Average Daily Sales of Chain Grocery Stores

Month	1929	1930	1931	1932	1933	1934	1935	1936	1937
January.....	26.8	25.8	27.4	26.7	26.7	26.4	26.5	26.6	26.7
February.....	24.8	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
March.....	27.3	26.9	25.3	26.1	26.4	26.0	27.3	26.3	26.0
April.....	25.3	25.4	25.4	27.3	26.3	24.0	26.8	26.4	26.7
May.....	26.4	26.0	27.3	26.3	26.0	26.1	26.4	27.3	26.9
June.....	26.3	24.0	26.3	25.4	25.7	27.3	26.3	26.4	26.4
July.....	25.0	26.1	26.4	27.3	26.9	26.3	26.0	26.4	26.0
August.....	25.6	27.0	26.9	26.0	26.1	26.4	26.0	26.9	26.3
September.....	24.0	24.7	25.4	25.7	27.3	26.3	24.0	26.4	26.4
October.....	24.1	26.4	26.0	26.0	26.3	26.0	26.1	26.0	27.3
November.....	27.3	26.3	24.0	25.4	25.4	26.7	27.3	24.6	25.3
December.....	25.8	26.0	26.7	26.6	27.9	27.5	25.0	26.7	27.0
Total.....	312.7	312.7	312.7	312.6	312.6	312.6	312.7	312.4	312.0

Adjustment for Seasonal Variation.

Seasonal fluctuations in grocery-store trade, although not pronounced, are sufficient to necessitate adjustment. Correction factors, therefore, were computed using the "ratio to moving average" method, with some further refinements. The adjustment factors indicate that minor peaks are reached in April and December, while the low point for the year is reached in August.*

Trend of Sales.

Although the quantity of food sold did not fall so low during the depression as did the volume of sales in other major lines, nevertheless the marked drop in prices was reflected in the dollar volume of sales (fig. 1). Sales of chain grocery stores in 1933 were only about three-fourths as large as in 1929, the index figure for the year having receded to 80.3 on the basis of the average for the years 1929-31 as 100, from 102.9 for 1929. The greatest decline for any one year occurred from 1931 to 1932, when sales decreased about 11 percent. Accompanying the increase in general business activity and with rising prices, sales increased about 3½ percent in 1934 over those of 1933; in 1935 there was a gain of 7½ percent over 1934, and in 1936 there was a further yearly gain of about 5½ percent. The index figure for the year 1936 was 94.4, indicating a recovery of more than 60 percent of the dollar volume lost between 1929 and 1933. Sales during the first quarter of 1937 indicate a continuation of this improvement.

Comparison With Price Index.

The influence of price changes on the volume of sales is not readily ascertainable, owing to the lack of a price index comparable with the sales index. A retail food price index is compiled by the Bureau of Labor Statistics. This index, presented in figure 2, provides an indication of the influence of price changes on chain grocery sales. However, no attempt has been made to adjust the sales index by the price series, because the variations in the items included and the weights involved render the validity of such procedure doubtful.

* The seasonal adjustment factors follow: January, 97; February, 100.5; March, 101; April, 106; May, 101.5; June, 101.5; July, 98; August, 96; September, 98; October, 100.5; November, 100; December, 102.

Table 4.—Retail Food Prices
(1929-31=100)

Month	1929	1930	1931	1932	1933	1934	1935	1936	1937
January.....	107.6	100.4	93.4	70.2	65.8	73.3	81.1	85.5	88.0
February.....	107.1	100.3	90.0	73.8	62.0	75.9	82.4	84.4	86.5
March.....	106.1	100.9	80.1	74.0	62.0	76.2	83.3	84.2	86.4
April.....	105.5	100.2	87.8	73.6	62.0	78.5	85.0	87.7	89.4
May.....	107.2	107.4	80.8	71.7	65.4	76.4	85.2	87.7	89.4
June.....	106.5	100.0	84.4	70.8	68.0	77.0	85.3	87.0	89.4
July.....	111.5	102.1	84.5	71.5	74.2	77.1	84.0	87.0	89.4
August.....	113.2	101.1	84.7	70.3	76.4	77.8	83.3	87.0	89.4
September.....	113.1	102.0	84.4	69.8	76.3	80.7	83.9	88.3	89.4
October.....	112.8	102.4	83.7	69.4	74.9	79.5	84.3	89.7	89.4
November.....	111.7	100.7	81.9	68.7	74.1	78.0	85.2	89.4	89.4
December.....	110.7	100.4	79.8	67.7	72.5	78.0	85.0	89.8	89.4

Source: Computed from the U. S. Bureau of Labor Statistics index, which is reported on a 1923-25 base.

Indexes To Be Issued Monthly.

The index figures shown in table 5 will be shown regularly in monthly statements issued by the Bureau in mimeographed form, and the figures will also appear with the retail-trade series published each month on page 26 of this publication. It is the intention to drop the index of sales of chain grocery stores as reported by the Chain Store Age, now shown on that page.

Movement of Index.

This index may be accepted as representing accurately the movement of chain grocery-store sales over the period covered, in view of the slight variation from the census returns. However, in the future the accuracy of the index will depend upon the extent to which the sales of the 10 companies reflect correctly any shifts in distribution which may take place in the grocery chain-store field. Whether changes that may occur from now on in the field of distribution will destroy the validity of the sample is a question for the future to determine; but, if such tendencies do develop, they will be revealed by the periodic census enumerations covering the retail field.

Table 5.—Index of Average Daily Sales of Grocery Chain Stores, Dollar Volume Basis

[1929-31-100]

Month

Without adjustment for seasonal variation

	1929	1930	1931	1932	1933	1934	1935	1936	1937
January.....	106.1	100.3	94.2	88.5	74.5	78.4	85.3	91.5	95.0
February.....	107.5	104.8	100.3	87.9	77.8	85.4	90.3	95.0	97.9
March.....	101.3	103.6	101.4	90.3	77.0	86.0	90.0	94.1	99.6
April.....	101.4	105.3	103.8	91.2	79.1	83.4	91.8	96.1	99.4
May.....	101.8	102.6	98.9	91.2	79.9	85.5	90.4	92.0	99.4
June.....	100.6	101.2	98.2	90.1	82.1	85.8	90.4	90.7	99.4
July.....	96.5	93.7	94.0	82.8	82.3	81.3	80.1	94.9	99.4
August.....	96.2	96.3	91.5	80.6	78.7	80.6	83.9	92.1	99.4
September.....	101.6	97.1	91.0	81.8	80.6	83.1	89.0	93.0	99.4
October.....	100.0	100.1	94.2	83.4	82.8	83.5	91.5	94.2	99.4
November.....	108.1	99.3	93.5	80.9	81.0	84.0	91.8	95.8	99.4
December.....	112.4	101.8	92.3	83.1	83.9	86.9	96.4	98.4	99.4
Annual.....	102.9	101.9	90.5	85.7	80.3	83.3	89.8	94.4	99.4

Month

With adjustment for seasonal variation

	1929	1930	1931	1932	1933	1934	1935	1936	1937
January.....	98.1	100.5	99.1	81.3	76.8	80.8	87.0	94.3	97.9
February.....	107.0	104.8	99.8	87.4	77.4	83.9	89.3	95.1	97.4
March.....	100.2	102.6	100.6	90.4	77.1	86.1	90.8	93.2	99.4
April.....	99.4	102.2	100.8	88.7	76.8	81.0	89.1	93.3	99.4
May.....	100.2	100.0	98.4	88.8	78.7	83.3	80.1	91.7	99.4
June.....	98.1	97.7	96.7	84.0	80.9	83.8	89.1	93.3	99.4
July.....	100.3	97.7	96.4	84.5	83.9	83.0	87.9	90.8	99.4
August.....	102.3	100.8	95.2	83.9	82.0	84.0	87.3	93.9	99.4
September.....	103.7	99.1	92.8	83.9	82.3	83.8	91.4	94.9	99.4
October.....	102.5	99.0	93.8	83.0	82.4	83.1	91.0	93.7	99.4
November.....	108.1	99.3	93.5	80.9	81.0	84.0	91.8	95.8	99.4
December.....	109.1	98.5	89.6	80.7	83.4	84.3	92.7	98.0	99.4

* Preliminary.